

Herbert Muller et al. 9/30/97 (earlier date)

II. AMENDMENTS TO THE CLAIMS

Claims 1-33. (canceled)

Claim 34. (New) A process for preparing a shell-type catalyst comprising:

- a) applying to a substantially nonporous inorganic support material having a BET surface area of less than $80 \text{ m}^2/\text{g}$ a suspension consisting essentially of:
- (i) at least one water soluble catalytically active metal compound; and
 - (ii) a substantially water insoluble coating compound selected from the group consisting of SiO_2 , Al_2O_3 , TiO_2 and ZrO_2
- b) drying said suspension onto said support material; and
- c) activating the preparation of step b) in a reducing gas stream.

Claim 35. (New) The process of claim 34, wherein said suspension consists of said water soluble metal compound and said substantially water insoluble coating compound selected from the group consisting of SiO_2 , Al_2O_3 , TiO_2 and ZrO_2 .

Claim 36. (New) The process of either claim 34 or 35, wherein said support material comprises a granulate or molded article of at least one member selected from the group consisting of: glass, quartz, ceramic, silica, alumina, graphite, molded carbon, metal, or sepiolite.

Claim 37. (New) The process of either claim 34 or 35, wherein said support material comprises a molded article of at least one member selected from the group consisting of SiO_2 and Al_2O_3 .

Claim 38. (New) The process of claim 36, wherein said molded article comprises at least one member selected from the group consisting of: a hollow extrudate, solid extrudate, sphere, granule, tablet, and strand.

Claim 39. (New) The process of either claim 34 or 35, wherein said support material has a diameter from 0.5 mm to 50 mm.

Claim 40. (New) The process of either claim 34 or 35, wherein the BET surface of said support material is less than $10 \text{ m}^2/\text{g}$.

according to
Claim 41. (New) The process of either claim 34 or 35, wherein said substantially nonporous support material has a pore volume of less than 0.5 ml/g.

according to
Claim 42. (New) The process of either claim 34 or 35, wherein said substantially nonporous support material has a pore volume of less than 0.1 ml/g.

according to
Claim 43. (New) The process of either claim 34 or 35, wherein said support material has an Fe_2O_3 content of less than 0.5% wt.

according to
Claim 44. (New) The process of either claim 34 or 35, wherein said water soluble catalytically active metal compound is a water soluble noble metal compound selected from the group consisting of Ru, Rh, Pd, Ag, Os, Ir, Pt, and Au.

according to
Claim 45. (New) The process of claim 44, wherein said water soluble metal compound is in the form of an oxide, hydroxide, carbonate, halide, nitrate, salt of an organic acid or a complex.

according to
Claim 46. (New) The process of either claim 44, wherein said suspension contains greater than 1% wt. aqueous solution of said water soluble noble metal compound, calculated as the metal.

according to
Claim 47. (New) The process of either claim 44, wherein said suspension contains > 5% wt. aqueous solution of said water soluble noble metal compound, calculated as the metal.

according to
Claim 48. (New) The process of either claim 44, wherein at least 0.01% wt. of said noble metal compound, calculated as the metal, is soluble in water at 30°C.

according to
Claim 49. (New) The process of either claim 34 or 35, wherein the maximum average agglomerate size of said oxide is 15 μm .

according to
Claim 50. (New) The process of either claim 34 or 35, wherein the agglomerate size of said oxide is from 3 μm to 7 μm .

according to
Claim 51. (New) The process of either claim 34 or 35, wherein the BET surface area of said water insoluble coating compound is from 50 m^2/g to 500 m^2/g .

Claim 52. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the compacted density of said insoluble coating compound is from 10 g/l to 800 g/l.

Claim 53. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the weight ratio of said water soluble noble metal compound to said insoluble coating compound calculated as the metal is from 0.1:1 to 5:1.

Claim 54. (New) The process ^{according to} ~~of~~ claim 53, wherein the weight ratio of said noble metal compound to said insoluble coating compound is between 0.5:1 and 2:1.

Claim 55. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the weight ratio of said noble metal compound, calculated as the metal, to the total weight of the shell-type catalyst is between 0.0001:1 and 0.02:1.

Claim 56. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the weight ratio of the coating compound to the total weight of the shell-type catalyst, calculated as the metal, is between 0.005:1 and 0.04:1.

Claim 57. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the thickness of the coating shell of the catalyst is from 0.1 μ m to 20 μ m.

Claim 58. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the concentration of the water soluble metal component, calculated as the metal, is from 0.1% wt. to 1% wt. based on the catalyst.

Claim 59. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein the concentration of the water insoluble coating material, calculated as the metal, is from 0.05% wt. to 1% wt. based on the catalyst.

Claim 60. (New) The process ^{according to} ~~of either~~ claim 34 or 35, wherein said reducing gas stream contains hydrogen.